

Sri (System of Rice Intensification) Advantages and Disadvantage

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INTRODUCTION

History off System of Rice Intensification (SRI)

System of Rice Intensification (SRI) was developed in 1980's by *Fr. Henri de Laulanie, S.J.*, who spent half a lifetime in Madagascar, working with poor farmers to improve their rice productivity and output so as to alleviate poverty.



Fr. Laulanié

SRI was discovered by *Prof. Dr. Norman Thomas Uphoff, CIIFAD, Cornell University, USA, in 1993* when he visited Madagascar to lead a study mission. He arranged a field test of SRI for 5 years in Madagascar to confirm the SRI effects. After his conviction on SRI, with an utmost dedication, he has disseminated SRI worldwide from 1997 to date.

The System of Rice Intensification (SRI) is a farming methodology aimed at increasing the yield of rice produced in farming. It is a low-water, labor-intensive method that uses younger seedlings singly spaced and typically hand weeded with special tools. We have to go for single seed sowing after 2-3 intensive puddling which increases the root growth.



Prof. Norman Uphoff,

Principles

SRI is based on the following principles:

- Young seedlings between 8-12 days old (2-3 leaf stage) are transplanted to preserve potential for tillering and rooting ability;
- Careful planting of single seedlings rather than in clumps that are often plunged in the soil; Wider spacing at 25 cm x 25 cm. in square planting rather than in rows; Use of cono-weeder/rotary hoe/power weeder to aerate the soil as well as controlling weeds; Alternate wetting and dry method rather than continuous flooding in the field;
- Use of organic manure or vermicompost / FYM.



Methods

The System of Rice Intensification is not a new method or technology. It is just altering the management practices to make more productive phenotype from the same genotype of rice plant. Artificial environment is created for growth and development of rice plant for exploitation of its full genetic potential, land and water resources. It can be accomplished by the following methods:

Raising nursery

(a) Selection of site

In System of Rice Intensification method, utmost care should be taken in the preparation of nursery bed, as 8-12 days old seedlings and in some places 14-15 days old seedlings (2-3 leaf stage) are transplanted. The nursery bed should be preferably prepared in the centre/corner of the plot for quick / efficient transplanting. Initially requires 10-15 persons to transplant one acre.

(b) Bed Preparation

The bed should be 4 feet wide. The length can vary depending on the need and space available. 2 kg seed would be needed for transplanting in one acre. For raising this, a nursery bed of 400 sq. ft. would be required. Depending upon the convenience a single bed or several smaller beds (say, 4 beds of 4 x 25 feet) can be prepared. As the roots of 8-12 day old seedling would grow up to 3 inches, it is necessary to prepare raised beds of 5-6 inches.

Nursery bed is prepared in this manner:

- 1st layer: 1 inch thick well decomposed FYM
- 2nd layer: 1 ½ inch soil
- 3rd layer: 1 inch thick well decomposed FYM
- 4th layer: 2 ½ inch soil



All these layers should be thoroughly mixed. Make a channel around the nursery bed to prevent the wet soil dropping down. The bed should be made secure on all sides with wooden planks, bamboos or any other suitable material.

(c) Seed rate

2 kg of seeds (5 kg / ha) is required to transplant in one acre of land. Seed should be thinly spread to avoid crowding of seedlings. Care should be taken that no two seeds should touch each other.



Paddy seeds



Seed treatment

(d) Seed Treatment

Healthy and pure seeds are used. Soak the seeds for 12 hours in water. Drain the water and treat the seed with bavistin (2gm / kg seed) or Trichoderma (3 gm / kg seed) or streptomycin (1gm / kg of seeds). There after transfer the treated seeds to a water soaked gunny bag. Leave it for 24 hours. Sprouted seeds are taken to the nursery for sowing.

(e) Mulching

Cover the bed with paddy straw, to cover from direct exposure to the sun and also to ensure protection from birds. Depending upon requirement, apply water with rose cans twice daily. Care should be taken to see that the seeds do not come out while watering. Remove the straw once seeds germinate.



(f) Preparation of main field

Preparation of the main field in System of Rice Intensification (SRI) is the same as in conventional method. However it is ideal that the field is dry, ploughed and puddling by tractor is avoided. Land selected for System of Rice Intensification (SRI) should be well leveled and should not have water logging condition. Particularly in black soils, the field should be ploughed and kept ready during summer itself. The field should be watered and transplanted. This way it would be easy to operate the weeder later. As puddling by tractor is not done the weeder would not get stuck and less energy would be sufficient to run the weeder.



The field should be level and there should be no standing water while transplanting.

(g) Method of Transplanting

The field should be well puddled and leveled. After leveling the field, a marker can be used to lay out the plot into wider spacing *i.e.*, 25 cm x 25 cm row to row and plant to plant. This can also be done with the help of rope by marking.





Young rice seedlings 8 to 12 days old and in some places 14-15 days old seedlings (2-3 leaf stage) is considered to be ideal for transplanting as compared to 25-30 days old seedlings in traditional method of rice cultivation. The seedlings with 2-3 leaves stage have great potential for profuse tillering and root development.

Types of markers

- ❖ Wooden markers.
- ❖ Roller markers.
- ❖ super markers

Farmers have prepared different types of markers using rope, wood and iron. There are Roller markers with 4 rows and super markers with 16 rows. Farmers have designed the roller marker. In the roller marker the horizontal and vertical lines are formed by pulling it, thus forming grids.



Wooden Marker



Super Marker



Roller Marker

Nutrient Management

Application of well decomposed Organic manures / vermi compost are recommended in SRI cultivation as they give better response and improve soil health. Application of FYM / compost (10-12 t/ha) before ploughing and incorporation of in situ grown 45-60 days old green manures crops are beneficial. Though complete organic manuring is recommended for SRI, in case of short supply of organics, fertilizer supplementation may be adopted for better yields.

Apply and incorporate 50 % of recommended fertilizers (NPK) through in-organics i.e., 50: 30: 20 kg NPK in kharif and 60 : 30 : 20 kg NPK in rabi depending on soil test values at the time of preparation of the field.



Water management

SRI method does not require continuous flooding. Irrigation is given to maintain soil moisture near saturation initially and water is let in when surface soil develops hairline cracks. The irrigation intervals, however, vary with soil texture. Soils having low water holding capacity require frequent irrigation.

Advantages of SRI

- Saving on seed cost as the seed requirement is less and Reduced

duration (by 10 days) and Less water requirement

- Saving on water as Irrigated – Dry method is followed.
- Cost of external inputs gets reduced as chemical fertilizers and pesticides are not used
- Incidence of pests and diseases is low as the soil is allowed to dry intermittently
- More healthy and tasty rice as a result

- of organic farming practices
- Higher yields due to profuse tillering, increased panicle length and grain weight
 - Soil health improves through
 - Not suitable when no irrigation source available

biological activity.

Disadvantages

- Higher labour costs in the initial years
- Difficulties in acquiring the necessary skills